Investigating Student Persistence in an Aerospace Engineering Program

Recent trends in the Aerospace Engineering (AE) industry point to the expansion and growth in the industry while its workforce lacks diversity and has an aging population as compared to other engineering majors. One of the ways to address the AE workforce is to retain engineering students who want to pursue AE as a career. Students usually show intent in pursuing a career in AE by choosing AE as their college major.

With the goal to increase persistence in AE, this study looked at a population of students who showed intent to pursue AE in their freshmen year at a large Midwestern University in the U.S. and subsequently left the major. The study examined survey data of over 1200 students collected over six years through binary logistic regression while employing multiple imputations to reduce biases due to missing data. The quantitative analysis highlighted high school preparation, especially in math and physics, and student self-reported analytical skills as important indicators for student academic success and persistence in AE. Additionally, variables related to academic experiences and academic integration were important.

With little literature available on AE students who migrate to another STEM discipline, the study examined nine students who left AE for other STEM majors before the end of their junior year. These students, who had the required skills for engineering, narrated their experiences during their time in AE and their reasons for leaving the major during audio-recorded interviews. The analysis revealed that these students left mostly because their interest in AE declined. A few students reported that AE constrained their future career options and that it is tough to get a job in the AE industry. Based on the study results, recommendations for students and the department have been discussed which may increase persistence in AE at the University.